

broken away. Being so furnished, the wire with its lead was weighed and the weight recorded.

*550. Chloride of lead was now introduced into the tube, and carefully fused. The lead electrode was also introduced; after which the metal, at its extremity, soon melted. In this state of things the tube was filled up to *c* with melted chloride of lead; the end of the electrode to be rendered negative was in the basin *b*, and the electrode of melted lead was retained in the basin *a*, and, by connection with the proper conducting wire of a voltaic battery, was rendered positive. A volta-

electrometer was included in the circuit. 551. Immediately upon the completion of the communication with the voltaic battery, the current passed, and decomposition proceeded. No chlorine was evolved at the positive electrode; but as the fused chloride was transparent, a button of alloy could be observed gradually forming and increasing in size at *b*, whilst the lead at *a* could also be seen gradually to diminish.

After a time, the experiment was stopped; the tube allowed to cool, and broken open; the wires, with their buttons, cleaned and weighed; and their change "in weight compared with the indication of the volta-electrometer.

552. In this experiment the positive electrode had lost just as much lead as the negative one had gained (530), and the loss and gain were very nearly the equivalents of the water decomposed in the volta-electrometer, giving for lead the number

101.5. It is therefore evident, in this instance, that causing *strong affinity*, or *no affinity*, for the substance evolved at the *anode*, to be active during the experiment (542), produces no variation in the definite action of the electric current.

553. A similar experiment was then made with iodide of lead, and in this manner all confusion from the formation of a periodide avoided (538). No iodine was evolved during the whole action, and finally the loss of lead at the *anode* was the same as the gain at the *cathode*, the equivalent number, by comparison with the result in the volta-electrometer, being 103.5.

554. Then protochloride of tin was subjected to the electric current in the same manner, using, of course, a tin positive electrode. No bichloride of tin was now formed (514, 525). On examining the two electrodes, the positive had lost precisely as much as the negative had gained; and by comparison with the volta-electrometer, the number for tin came out 59.

555. It is quite necessary in these and similar experiments to examine the interior of the bulbs of alloy at the ends of the